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Subject: Environmental Defense comments on C.I. Acid Yellow 23 (CAS# 1934-21-0)

(Submitted via Internet 7/19/04 to oppt.ncic@epa.gov, hpv.chemrtk@epa.gov, boswell.karen@epa.gov, chem.rtk@epa.gov, lucierg@msn.com and tadams@therobertsgroup.net)



Environmental Defense appreciates this opportunity to submit comments on the robust summary/test plan for C.I. Acid Yellow 23 (CAS# 1934-21-0).

The test plan and robust summaries for C.I. Acid Yellow 23 (AY23) were submitted by the International Association of Color Manufacturers. According to the sponsor, AY23 is an azo dye that is used to color candies and confections, bakery goods, cakes, cookies, ice cream, cereals, jams, jellies, pudding and beverage powders, maraschino cherries, prepared meats, canned and frozen vegetables, animal feeds, toothpastes, many other foodstuffs and some cosmetics and drugs. These uses are approved by the FDA, and the chemical has also been evaluated for safety by the WHO Committee for the Evaluation of Food additives (JEFCA). JEFCA established and average daily intake of up to 7.5 mg/kg/day, but this was apparently done in 1964. Has this evaluation been updated in the last 40 years?

According to the test plan, the FDA has established upper limits for several toxic impurities allowed in AY23, although it is not clear when those upper limits were established. We are concerned with those impurities, as they include arsenic (3 ppb), benzidine (1 ppb), lead (10 ppm) and mercury (1 ppm). Has a recent market basket survey been used to estimate the intake of these toxicants based on the amounts of AY 23 consumed by U.S. citizens, particularly children? Mercury and lead are both potent developmental toxicants and arsenic and benzidine dyes are known human carcinogens. We request that the amounts of mercury, lead, arsenic, benzidine and other toxicants in AY 23 and in foodstuffs to which this dye is added be made publicly available. The levels allowed by FDA seem too high, particularly for mercury and lead, given increased understanding of the toxic effects of these metals. Was information on the levels of these toxic contaminants present in AY23 made available to JEFCA in 1964 when they concluded that AY23 does not possess carcinogenic potential?

The sponsor concludes that existing data are adequate for all SIDS endpoints. While we agree with this contention for mammalian health endpoints, we do have some concerns that need to be addressed before we make a final recommendation. There are several available repeat dose studies, including long-term bioassays, and the reproductive and developmental endpoints seem to be well-covered. However, the test substances used in these studies have not been adequately characterized in the robust summaries. What were the levels of the toxic impurities discussed in the above paragraph, and are those levels consistent with the amounts generally found in AY23 added to various foodstuffs? Also, is there any information available on the mechanism by which AY23 caused the chromosomal aberrations observed in one of the genetic toxicity tests?

We also have a concern with the adequacy of the data provided for the aquatic toxicity endpoints. The sponsor uses ECOSAR estimates along with experimental data from a proposed surrogate to address all three endpoints. The surrogate data are from aromatic sulfone derivatives, but these derivatives have significantly different structures than AY23. For example, they do not have an acid moiety, they have different degrees of unsaturation on the ring structures, and they do not contain a diazo moiety, so we do not agree that the surrogate data can be used to address SIDS endpoints. The ECOSAR models predict a very low order of toxicity to fish, aquatic invertebrates and algae, but the structure of AY23 may not permit accurate ECOSAR estimates. Therefore, we recommend that at least a fish or aquatic invertebrate toxicity study be conducted, and if the results differ significantly from the ECOSAR estimates, then studies need to be conducted on the other two aquatic toxicity endpoints.

Other comments are as follows:

1. The oral acute toxicity is 12 g/kg, while the ip and iv values are 2 and 1 g/kg, respectively. This seems to suggest that AY23 is poorly absorbed following ingestion. Is this true?

2. The metabolism studies summarized in the test plan indicate that only 4% of administered AY23 is excreted after 72 hrs, and it is also stated that there were only trace amounts of AY23 or metabolites in internal organs. Where is the other 96%? Are AY23 and/or metabolites retained in the blood?

Thank you for this opportunity to comment.

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